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Summer SOFR Series

SOFR Explained

Summer SOFR Series

- July 13: Libor: Entering the Endgame
- July 15: SOFR Explained
- July 22: Preparing to move from LIBOR Derivatives
- July 29: Accounting/Tax/Regulation
- August 3: Approaching the Transition
- August 7: Office Hours Live

Summer SOFR Series – SOFR Explained

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- David Bowman, Senior Associate Director, Federal Reserve Board
- Meredith Coffey, Executive Vice President of Research & Public Policy, LSTA
- Tom Deas, Chairman, National Association of Corporate Treasurers
- John Gerli, Chief Capital Markets Officer, FHLBanks Office of Finance
- David Knutson, Head of Credit Research - Americas, Schroders and Vice Chair, Credit Rountable
- Ameez Nanjee, Vice President, Asset Liability Management, Freddie Mac
- Alexis Pederson, Senior Company Counsel, Wells Fargo & Co.

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Background

David Bowman

The Secured Overnight Financing Rate (SOFR)

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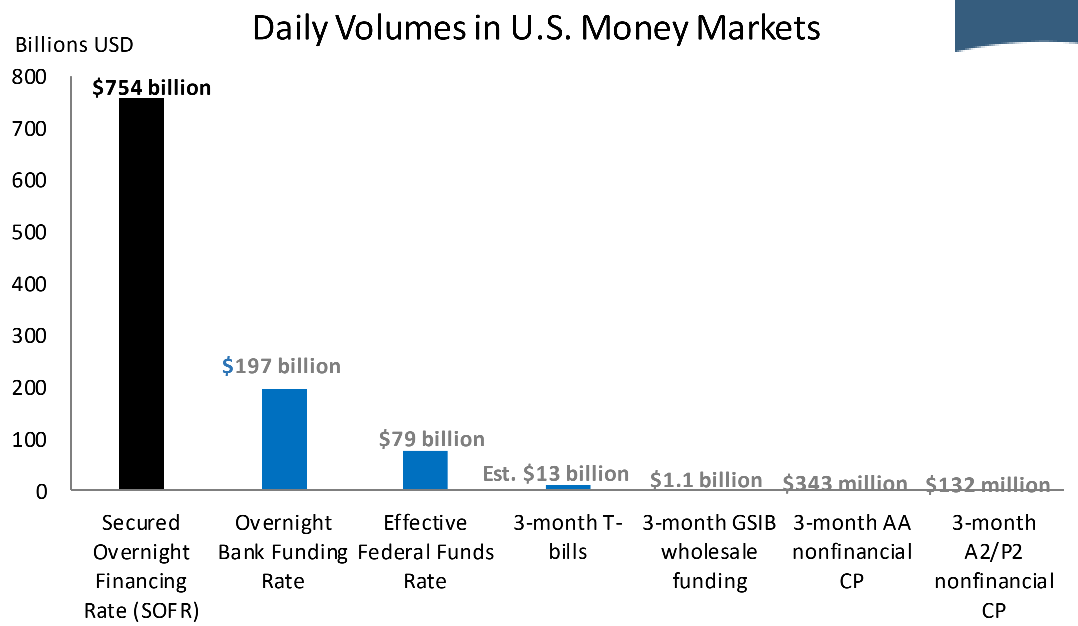
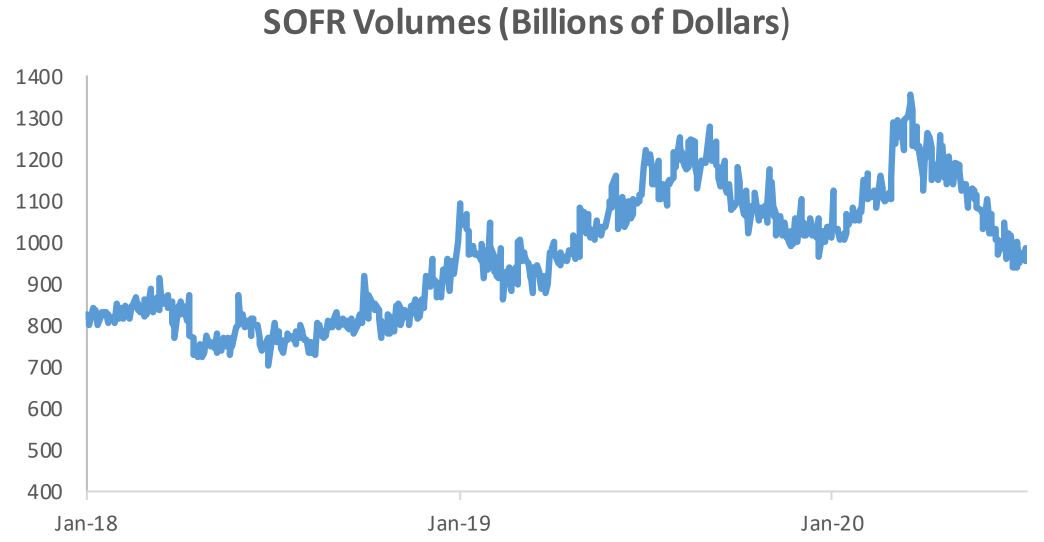
- SOFR is based on overnight borrowing in the U.S. Treasury repo market. The U.S. treasury repo market involves a wide set of financial firms, including many asset managers and other buyside firms, not just banks. As such, SOFR represents the private sector risk-free rate.
- The U.S. Treasury repo market is the single largest rates market at a given maturity in the world. SOFR has sufficient depth to make it extraordinarily difficult to ever manipulate or influence;
- When SOFR began production its underlying volumes were in the range of $750 billion on a daily basis, but with innovations in repo clearing, daily volumes have risen to over $1 trillion.
- The U.S. Treasury repo market was able to weather the global financial crisis and the ARRC credibly believes that it will remain active enough in order that it can reliably be produced in a wide range of market conditions.
- SOFR is produced by the Federal Reserve Bank of New York (FRBNY) for the public good;
- It is produced in a transparent, direct manner and is based on observable transactions, rather than being dependent on estimates, like LIBOR, or derived through models.





Why Was SOFR Needed?

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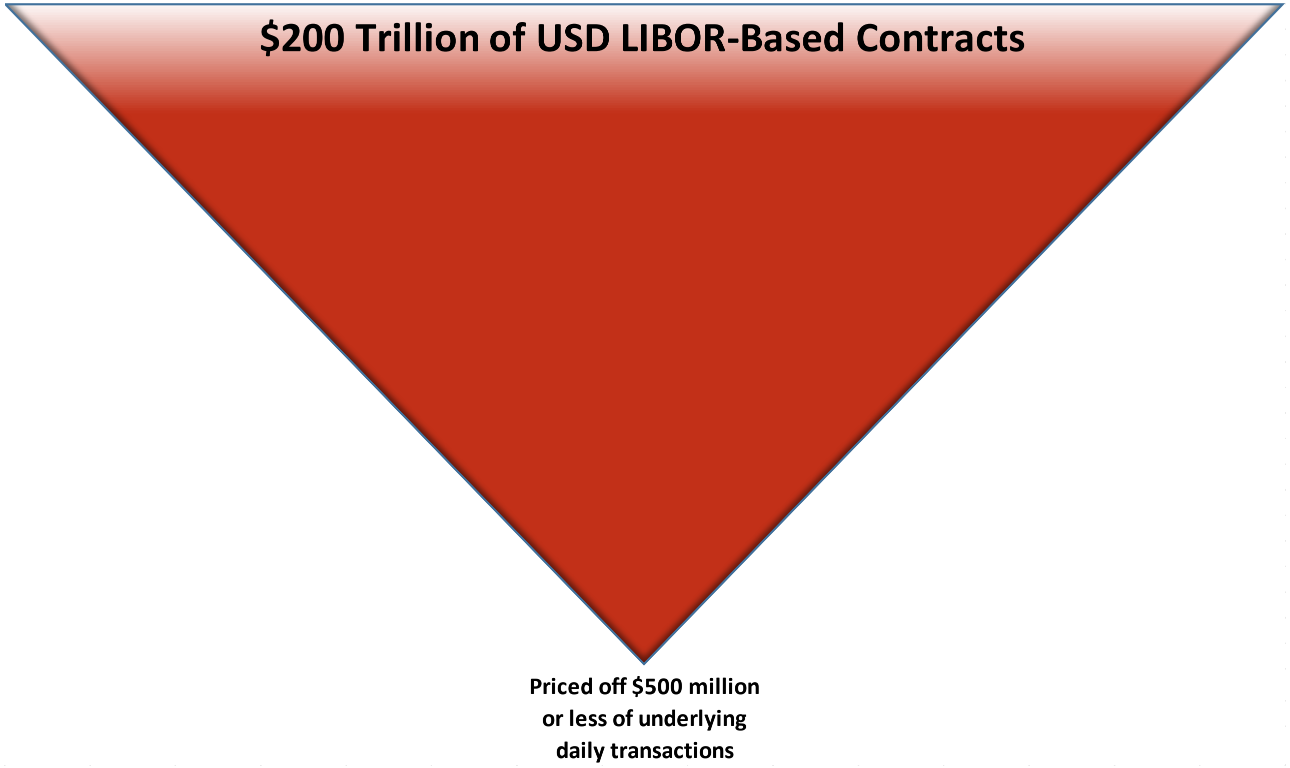
Although LIBOR had grown to be used in $200 trillion of U.S. dollar loans and securities, the market it is based on is very thin

Submitting banks must rely on expert judgement and grew increasingly unwilling to continue this.

In an unprecedented intervention, the official sector had to step in to provide sufficient time for market participants to prepare for a transition.

There was no clear alternative robust enough to support $200 trillion of activity. The Federal Reserve convened the ARRC to consider the range of existing and potential reference interest rates and identify rate that would represent best practice for use.



How was SOFR Chosen?

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The ARRC set out a rigorous set of criteria for best practice

Benchmark Quality

The degree to which the benchmark design ensured the integrity and continuity of the rate. The underlying market was evaluated according to its:

- Liquidity
- Transaction volume
- Resilience through periods of illiquidity
- Resilience to changes in regulatory approach
- Potential that the benchmark may constrain or be adversely affected by changes in the monetary policy framework

Methodological Quality

The degree to which the benchmark construction could satisfy the IOSCO Principles for soundness and robustness. Rates were also evaluated according to:

- Standardized terms for data inclusion
- Transparency of data
- Availability of historical data

Accountability

- Evidence of a process that ensures compliance with the IOSCO Principles

Governance

Evidence of governance structures that promote the integrity of the benchmark

Ease of Implementation

Assessed ease of transitioning to the rate, including:

- Anticipated demand for and relevance to hedging/trading
- Existence of or potential for a term market in the underlying rate

The ARRC considered a comprehensive list of potential alternatives

- Term unsecured rates
- Term OIS rates
- Overnight unsecured
- Secured repo rates
- Treasury bill and bond rates

Inclusive Selection Process

The ARRC formed an Advisory Group of key end users across a variety of market sectors to ensure that its recommendations reflected a wide consensus of market participants. A clear majority of the Advisory Group favored a repo rate like SOFR.

The ARRC published an Interim Report and Consultation seeking views from all market participants in making its selection, and held an open roundtable directly seeking views.

The Structure of the ARRC

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When it was formed the ARRC was comprised of the major global dealers, but it expanded far beyond that. Many members of the Advisory Group became direct members.

The ARRC is not a group of big banks. Only about a third of ARRC members are banks or bank associations, and not all of those are or represent large banks

A wide range of firms of all sizes, market participants, and consumer advocacy groups participate in the ARRC's working groups. Currently about 1500 individuals participate in these groups.

ARRC Members

American Bankers Association	International Swaps and Derivatives Association
Association for Financial Professionals	JPMorgan Chase
AXA	KKR
Bank of America	LCH
BlackRock	MetLife
Citigroup	Morgan Stanley
CME Group	National Association of Corporate Treasurers
Comerica	Pacific Investment Management Company
CRE Finance Council	PNC
Deutsche Bank	Prudential Financial
Fannie Mae	Structured Finance Association
Ford Motor Company	TD Bank
Freddie Mac	The Federal Home Loan Banks
GE Capital	The Independent Community Bankers of America
Goldman Sachs	The Loan Syndications and Trading Association
Government Finance Officers Association	The Securities Industry and Financial Markets Association
HSBC	Wells Fargo
Huntington	World Bank Group
Intercontinental Exchange	

Ex Officio Members

Commodity Futures Trading Commission	New York Department of Financial Services
Consumer Financial Protection Bureau	Office of Financial Research
Federal Deposit Insurance Corporation	Office of the Comptroller of the Currency
Federal Housing Finance Agency	U.S. Department of Housing and Urban Development
Federal Reserve Bank of New York	U.S. Securities and Exchange Commission
Federal Reserve Board	U.S. Treasury
National Association of Insurance Commissioners	

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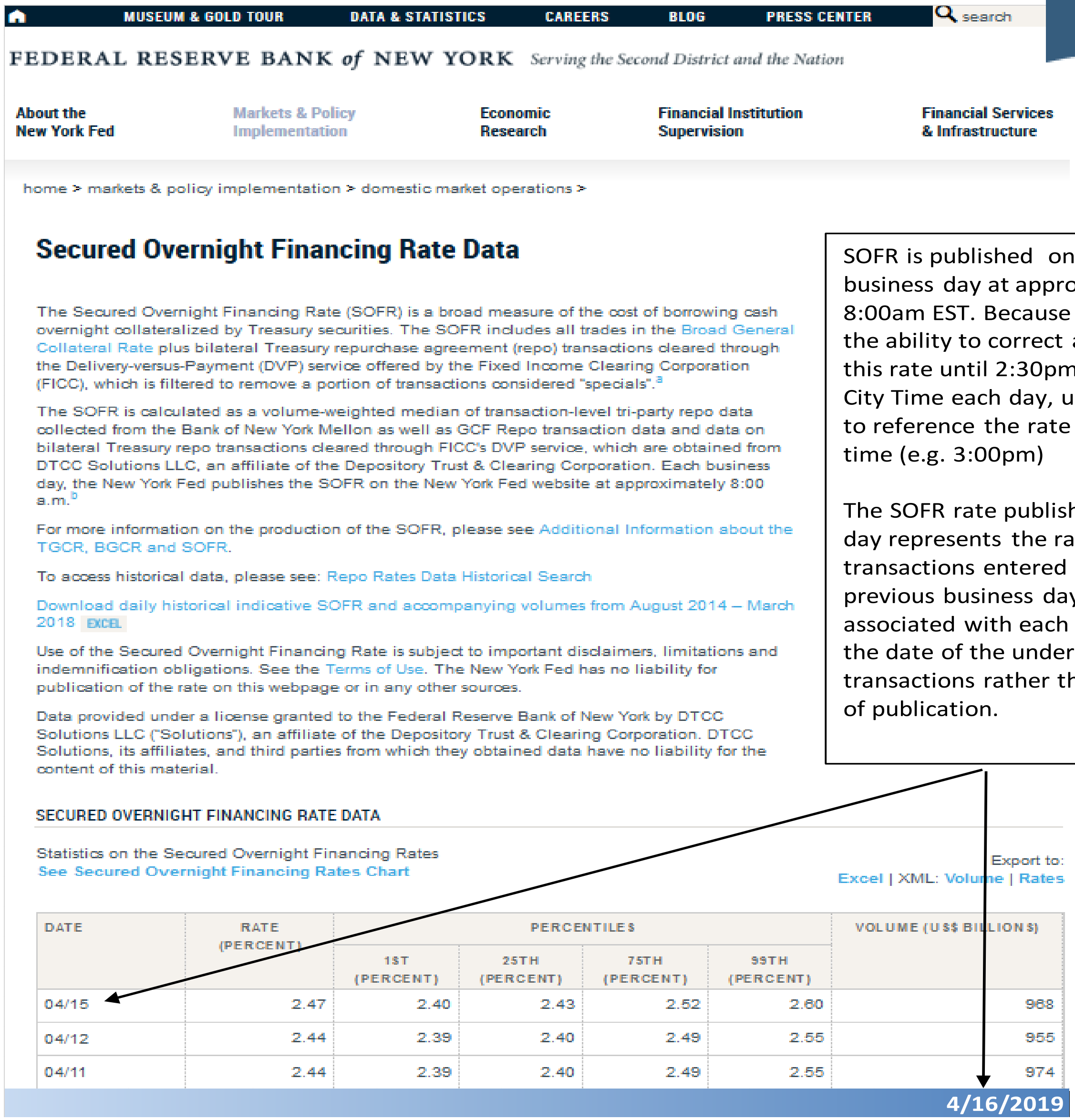
Where is SOFR Published

SOFR is published on the Federal Reserve Bank of New York's website every U.S business day at approximately 8am EST. (https://apps.newyorkfed.org/markets/autorates/sofr)

The rate published each day represents the rates on overnight repo transactions that were entered in to the previous business day and that are to be repaid on the current business day. So, for example, on April 16, the rate for transactions entered in to on April 15 would be published.

This is similar to how the effective federal funds rate (EFFR) and risk-free rates (RFRs) in other jurisdictions are published.

FRBNY also produces 30-, 90-, and 180-day compound averages of SOFR that can be directly referenced in contracts, and a SOFR "Index" that allows calculation of compound averages over any period, which should help with systems implementation for SOFR products



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Secured Overnight Financing Rate Data

The Secured Overnight Financing Rate (SOFR) is a broad measure of the cost of borrowing cash overnight collateralized by Treasury securities. The SOFR includes all trades in the Broad General Collateral Rate plus bilateral Treasury repurchase agreement (repo) transactions cleared through the Delivery-versus-Payment (DVP) service offered by the Fixed Income Clearing Corporation (FICC), which is filtered to remove a portion of transactions considered "specials".[a]

The SOFR is calculated as a volume-weighted median of transaction-level tri-party repo data collected from the Bank of New York Mellon as well as GCF Repo transaction data and data on bilateral Treasury repo transactions cleared through FICC's DVP service, which are obtained from DTCC Solutions LLC, an affiliate of the Depository Trust & Clearing Corporation. Each business day, the New York Fed publishes the SOFR on the New York Fed website at approximately 8:00 a.m.[b]

For more information on the production of the SOFR, please see Additional Information about the TGCR, BGCR and SOFR.

To access historical data, please see: Repo Rates Data Historical Search

Download daily historical indicative SOFR and accompanying volumes from August 2014 – March 2018 EXCEL

Use of the Secured Overnight Financing Rate is subject to important disclaimers, limitations and indemnification obligations. See the Terms of Use. The New York Fed has no liability for publication of the rate on this webpage or in any other sources.

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SECURED OVERNIGHT FINANCING RATE DATA

Statistics on the Secured Overnight Financing Rates
See Secured Overnight Financing Rates Chart

Export to: Excel | XML: Volume | Rates

DATE	RATE (PERCENT)	PERCENTILES				VOLUME (US$ BILLIONS)
		1ST (PERCENT)	25TH (PERCENT)	75TH (PERCENT)	99TH (PERCENT)	
04/15	2.47	2.40	2.43	2.52	2.60	968
04/12	2.44	2.39	2.40	2.49	2.55	955
04/11	2.44	2.39	2.40	2.49	2.55	974

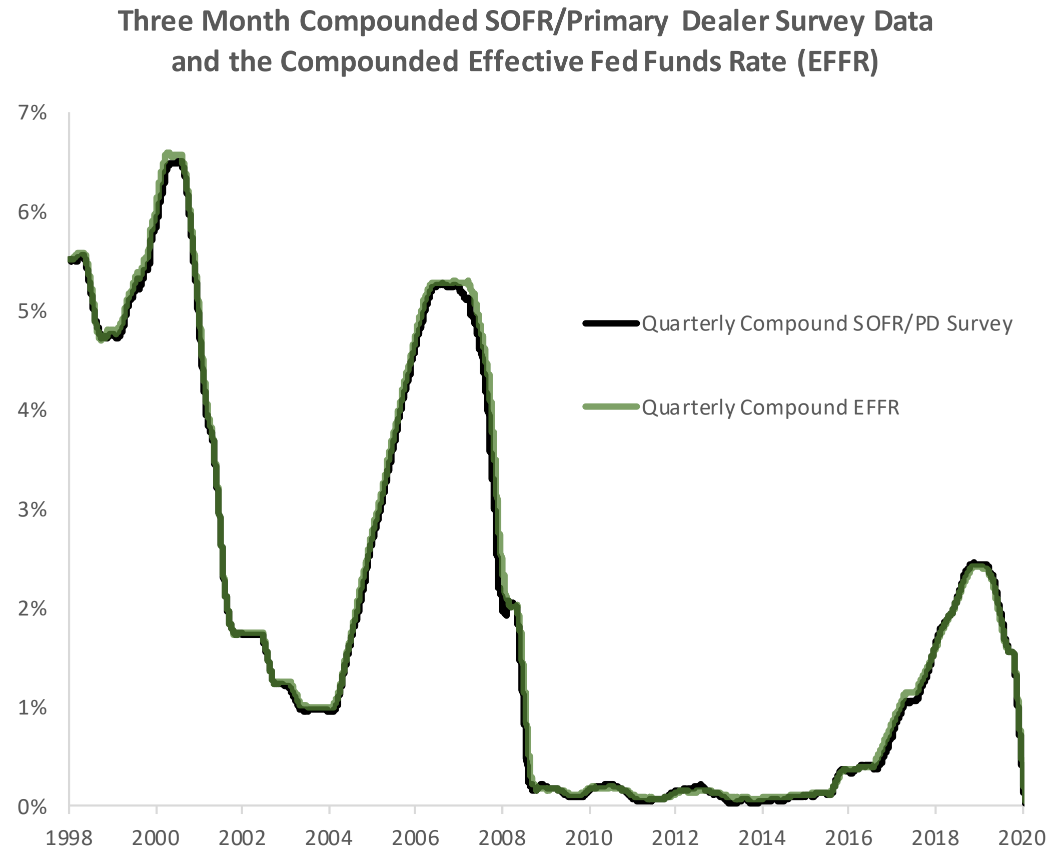
4/16/2019

SOFR is published on every U.S. business day at approximately 8:00am EST. Because the Fed has the ability to correct and republish this rate until 2:30pm New York City Time each day, users may wish to reference the rate after this time (e.g. 3:00pm)

The SOFR rate published on any day represents the rate on repo transactions entered into on the previous business day and the date associated with each rate reflects the date of the underlying transactions rather than the date of publication.

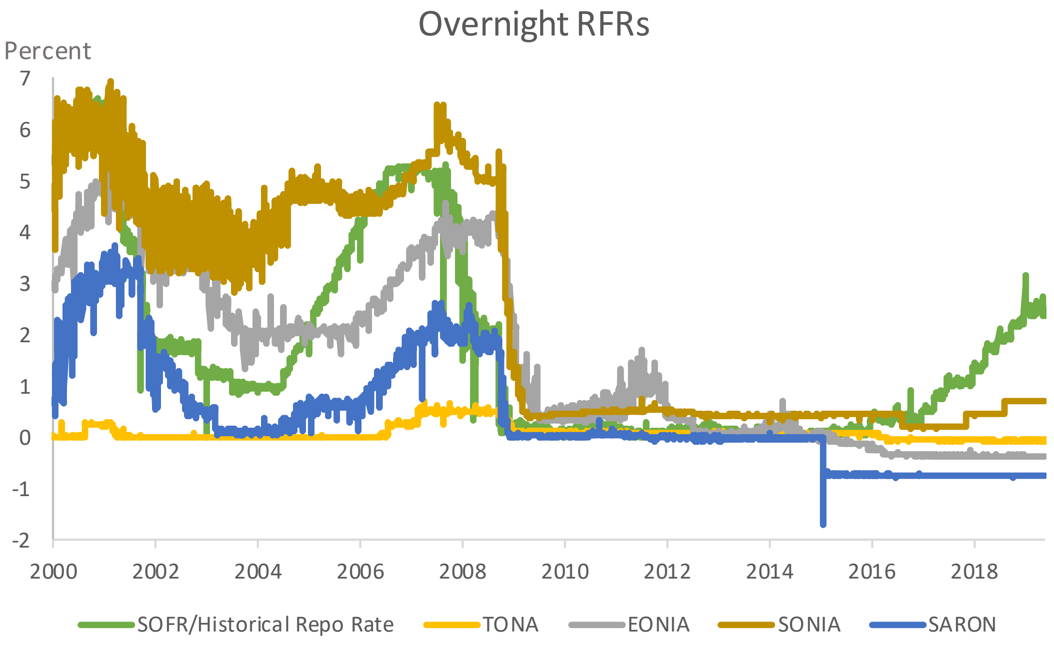
Historical Data

- FRBNY, in cooperation with the Office of Financial Research, began publishing SOFR on April 3, 2018.
- Prior to the start of official publication, FRBNY released data from August 2014 to March 2018 representing modeled, pre-production estimates of SOFR that are based on the same basic underlying transaction data and methodology that now underlie the official publication. (https://www.newyorkfed.org/newsevents/speeches/2017/fro171108)
- FRBNY has also separately released a much longer historical data series based on primary dealers' overnight Treasury repo borrowing activity. (https://www.newyorkfed.org/markets/opolicy/operating_policy_180309)
- A Feds Note I have written argues that the historical survey data is an adequate proxy for SOFR for risk modelling or other purposes. (https://www.federalreserve.gov/econres/notes/feds-notes/historical-proxies-for-the-secured-overnight-financing-rate-20190715.htm)

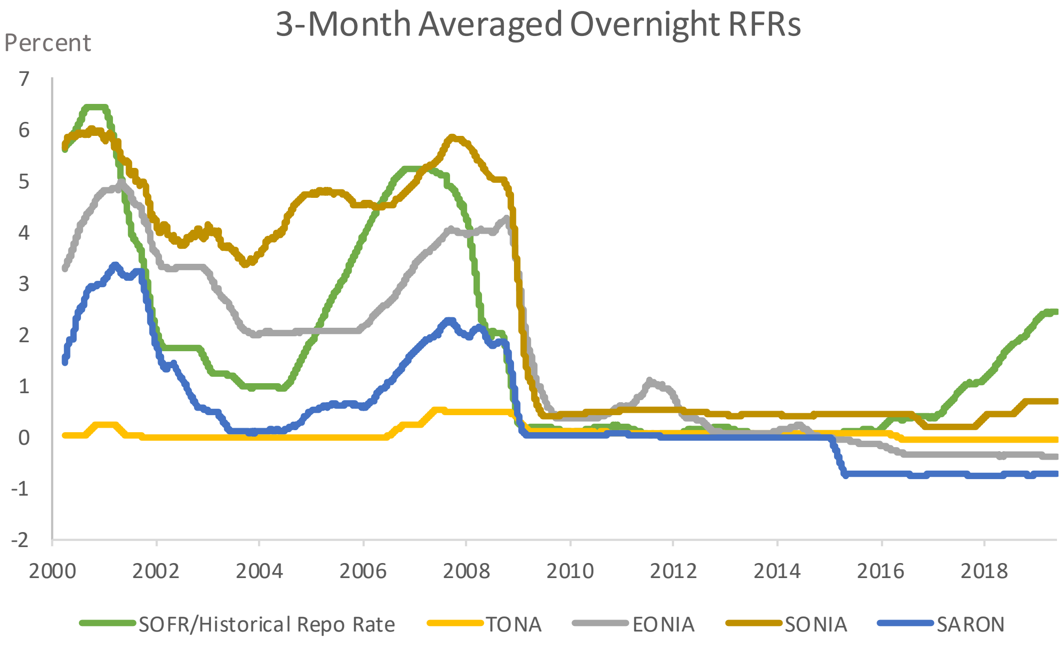


Average Overnight Rates

Like the ARRC, the National Working Groups in other jurisdictions also chose overnight "risk free rates" because those markets were the only having sufficient depth. The financial contracts using overnight RFRs have referenced an average (1-month or 3-month) of the overnight RFR for floating rate payments, not typically one-day's reading of the rate. An average of daily overnight rates will accurately reflect movements in interest rates over a given period of time. Those averages tend to be very smooth and appropriate for use in financial contracts.



Sources: Federal Reserve Bank of New York; Bank of Japan; Bank of England; SIX (Swiss Infrastructure and Exchange); European Money Market Institute.



Sources: Federal Reserve Bank of New York; Bank of Japan; Bank of England; SIX (Swiss Infrastructure and Exchange); European Money Market Institute.

Some Common Misconceptions #1

Averages of SOFR are smoother than LIBOR

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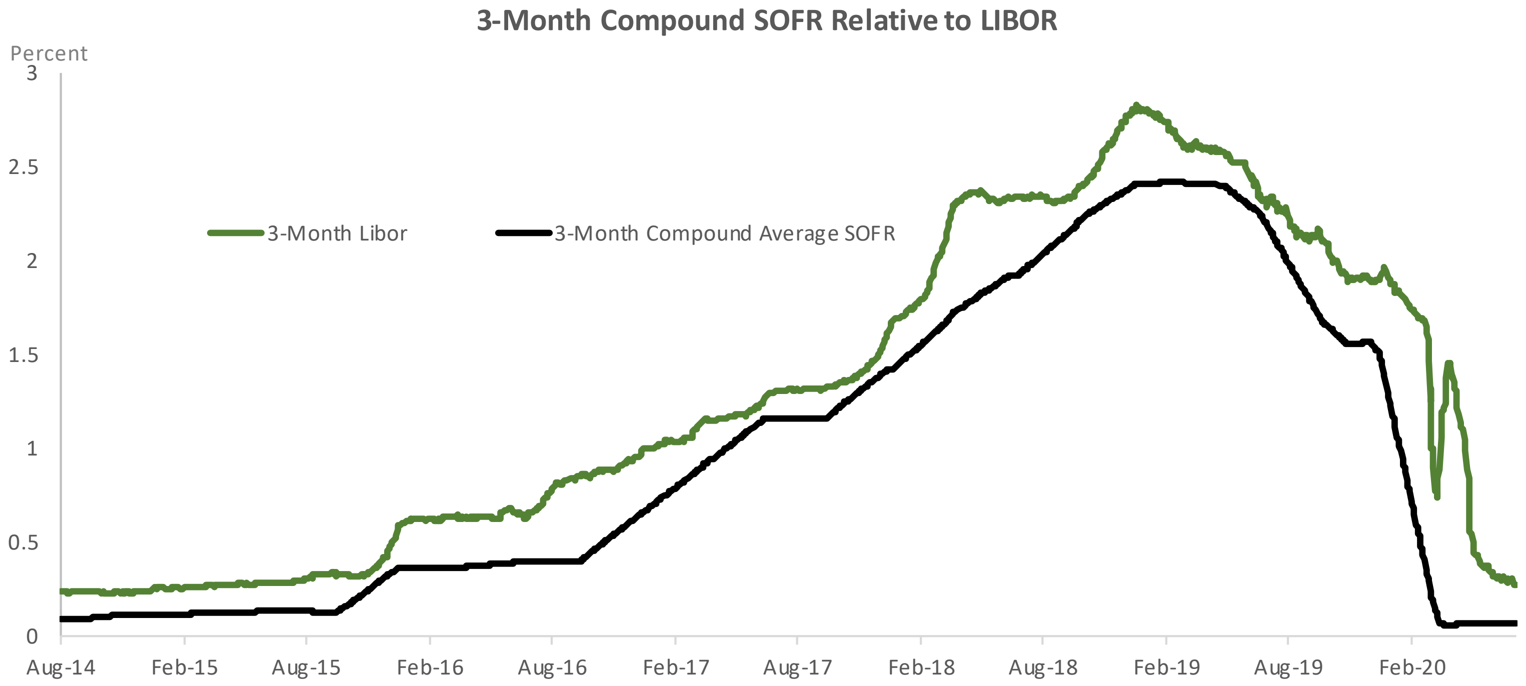
Although SOFR can exhibit some day-to-day volatility, most notably in mid-September 2019 and year-end 2018, the SOFR-based financial products that have been issued all reference an average of SOFR. Those averages are quite smooth and have moved down recently with monetary policy rates.



The Different Potential Versions of SOFR-Based Rates

As will be discussed, in greater detail by the panelists, there are a number of ways to use SOFR

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Exist and Can be Used Now

- **In Advance**

  Interest payments are based on SOFR Averages set at the start of an interest period. Payments typically based on 30-, 90-, or 180-Day SOFR Averages but can use the SOFR Index.

- **Compound In Arrears**

  Interest payments are based on compound averages of SOFR, the SOFR Index, or daily SOFR over the interest period and not known until near the end of the period.

- **Daily Simple SOFR (Simple in Arrears)**

  Interest payments are based on daily OFR over the interest period and not known until near the end of the period. Similar to Compound in arrears but based on simple interest

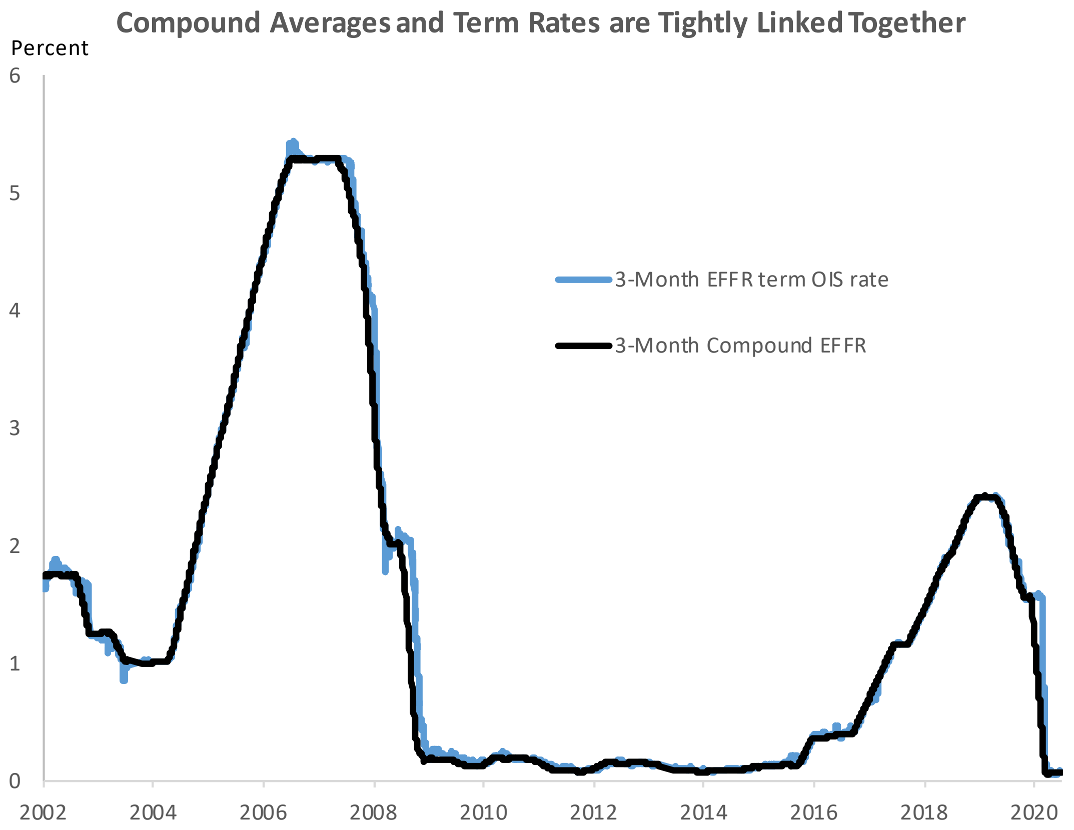
Does Not Yet Exist

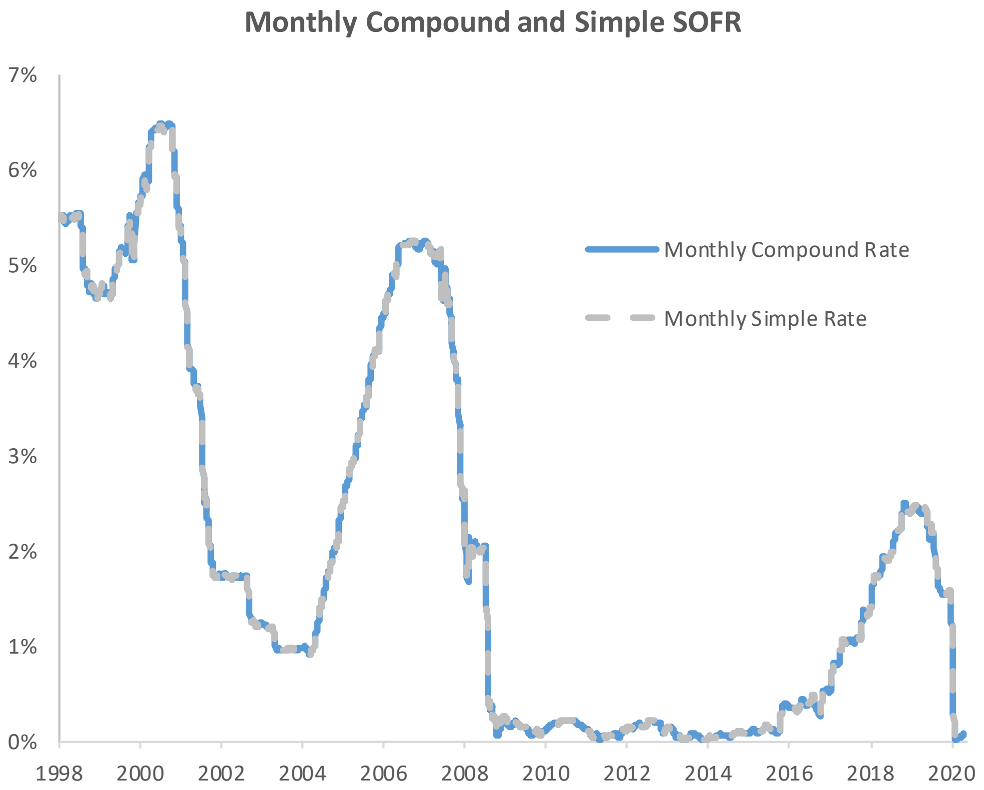
- **Term Rates**

  The ARRC hopes to develop forward-looking term rates based on SOFR derivatives, but this depends on the further development of SOFR derivatives markets.

  However, while the term rates may be a useful tool as a fallback rate and for specific segments of cash markets such as some business loans, we can't guarantee the timing of their production and the FSB has warned that most products should use risk-free rates.

The Different Potential Versions of SOFR-Based Rates are Closely Linked

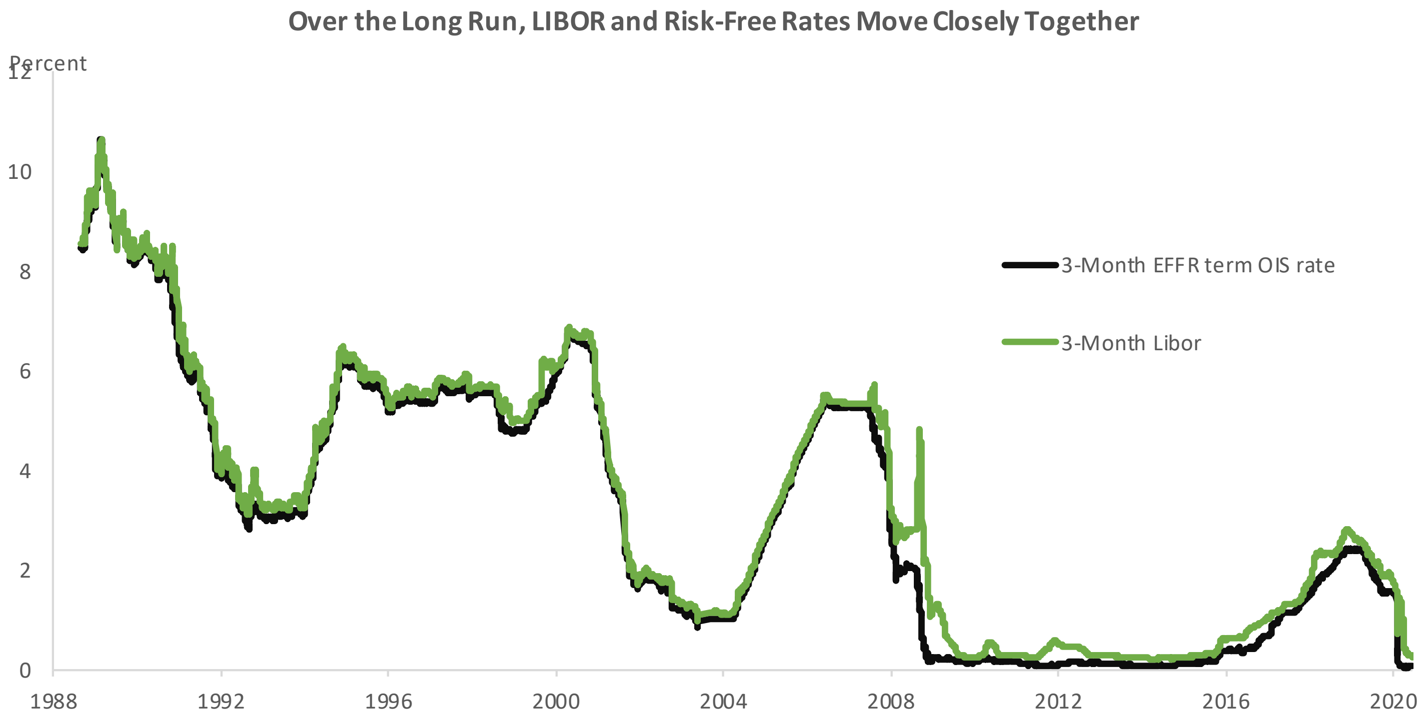




Some Common Misconceptions #2

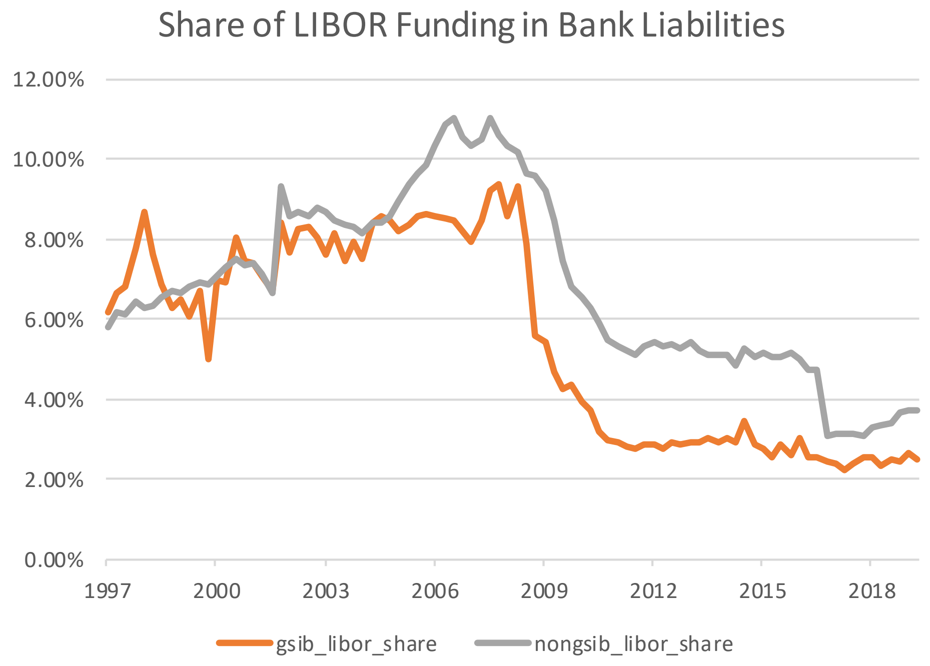
Over Long Periods of Time, SOFR and LIBOR Move Closely Together

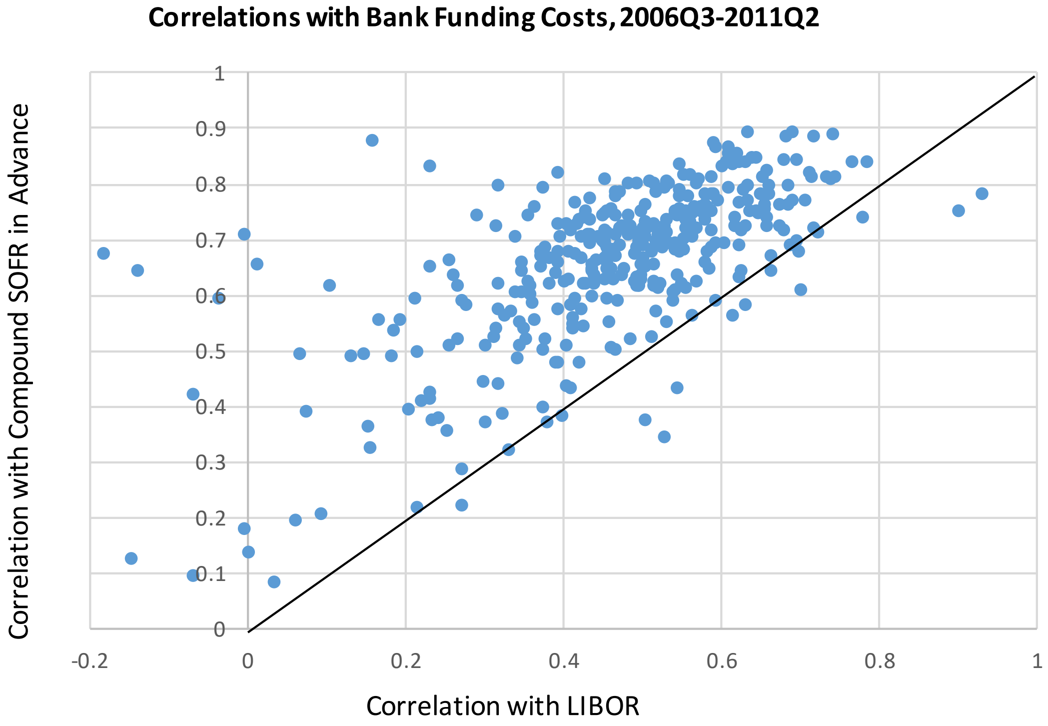
There are differences between LIBOR and SOFR, but it is important to keep in mind that over the long run, LIBOR has actually moved up and down with monetary policy, as do risk-free rates. These changes in monetary policy expectations account for 99% in the movements in LIBOR over the last 30 years.



Some Common Misconceptions #3

Compound Averages of Treasury repo rates were more correlated with bank funding costs than LIBOR, even over the period covering the financial crisis





SOFR Markets

SOFR Futures trading has started at a faster pace than either Eurodollar Futures or Fed Funds Futures.

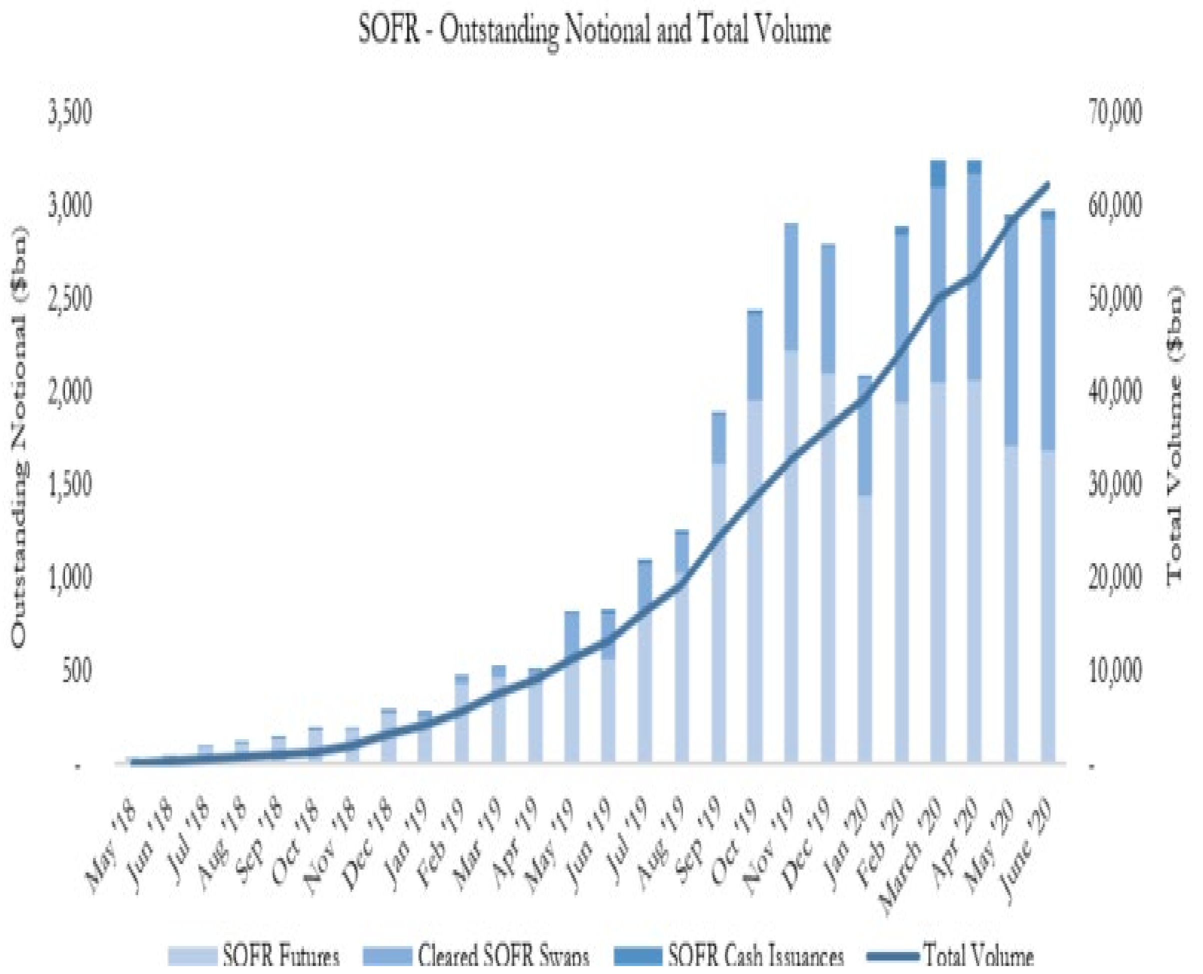
- Average daily volume has reached about $140 billion notional, with open interest currently near $2 trillion

SOFR swaps trading was expected to and has developed more slowly as it will be driven by use of SOFR in cash markets and trading has begun to pick up. Cleared Currently, there are over $600 billion in outstanding notional SOFR OIS swaps and over $700 billion in SOFR basis swap.

The floating rate debt market has been the first to take up SOFR, with over $680 billion in SOFR debt having been issued, driven by almost $300 billion in debt issued by the FHLBs.

The ARRC has produced a whitepaper describing models for using SOFR in adjustable rate mortgages (ARMs). Fannie and Freddie are now developing the capability to accept SOFR ARMs based on this work.

We've seen several small SOFR loans domestically and abroad, and some some ecuritization with payments based on SOFR.



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Floating Rate Notes

Alexis Pederson, David Knutson, and John Gerli

Themes of “SOFR Explained” Panel

- Some cash market participants have adopted SOFR early and very successfully
- There are different ways to use SOFR in cash products
- There may not be a “one size fits all” solution for cash products
- The benefits of a ***phased*** transition plan for some cash products

SOFR FRN “In Arrears” Structures

Conventions	Day 0	Day 1	Day 2		Day T-3	Day T-2	Day T-1	Day T	Day T+1	Day T+2
		First Day of Interest Period					Last Day of Interest Period	First Day of Next Interest Period		
2-Day Payment Delay		Use SOFR Day 1 with weighting for Day 1	Use SOFR for Day 2 with weighting for Day 2	…	Use SOFR for Day T-3 with weighting for Day T-3	Use SOFR for Day T-2 with weighting for Day T-2	Use SOFR for Day T-1 with weighting for Day T-1	*Payment Delay*	*Payment Delay*	*Payment Due*
2-Day Lockouts		Use SOFR for Day 1 with weighting for Day 1	Use SOFR for Day 2 with weighting for Day 2	…	Use SOFR for Day T-3 with weighting for Day T-3	Cut-off Period Use SOFR for Day T-3 with weighting for Day T-3	Cut-off Period Use SOFR for Day T-3 with weighting for Day T-3	*Payment Due*		
2-Day Lookback		Use SOFR for Day -1 with weighting for Day 1	Use SOFR for Day 0 with weighting for Day 2	…	Use SOFR for Day T-5 with weighting for Day T-3	Use SOFR for Day T-4 with weighting for Day T-2	Use SOFR for Day T-3 with weighting for Day T-1	*Payment Due*		
2-Day Backward-shifted Observation Period[1]		Use SOFR for Day -1 with weighting for Day -1	Use SOFR for Day 0 with weighting for Day 0	…	Use SOFR for Day T-5 with weighting for Day T-5	Use SOFR for Day T-4 with weighting for Day T-4	Use SOFR for Day T-3 with weighting for Day T-3	*Payment Due*		

Interest Period (Day 1 to Day T-1)

Observation Period (Day -1 to Day T-3)

[1] With the Backward-shifted Observation Period, the period over which SOFR is observed is ***“backward-shifted”*** in the compounding formula, and this backward-shift includes both the ***rate*** (“$SOFR_i$”) and the ***weighting*** of that rate (“n_i”) such that the rate and weighting are determined based on the day of the Observation Period (rather than the day of the Interest Period).

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SOFR FRN Structuring Considerations

- **Market consistency** (*i.e.,* market participants have cited consensus across FRN structures as an important factor in either issuing or buying FRNs)
- **Hedge effectiveness** (*i.e.*, how closely the coupons could align with the floating leg of a SOFR-linked cleared derivative)
- **Secondary market liquidity and trading** for various FRN structures
- **Timing of payments** (*i.e.,* whether payments will be delayed)
- **Operational efficiency** (*e.g.*, fewer system enhancements required)
- **Ease of calculation** (*e.g.*, systems are capable of calculating final accrued amounts before settlements are due)
- **Inclusion of all SOFR fixings** in the calculation of payments (*i.e.,* generally market participants wish to avoid “lockouts”)

ARRC FRN Working Group Publications

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SOFR FRN Conventions Matrix

On August 1, 2019, the working group published a matrix that identifies considerations relevant to using SOFR in FRNs

SOFR FRN Term Sheets

On November 21, 2019, the working group published an appendix to the conventions matrix that includes SOFR FRN term sheets and fallback language

SOFR Index FRN

On May 6, 2020, the working group released a statement to provide market participants with information about how the New York Fed's SOFR Index may be referenced in FRNs that includes structuring considerations and a term sheet

Available at:

https://www.newyorkfed.org/medialibrary/Microsites/arrc/files/2019/ARRC_SOFR_FRN_Conventions_Matrix.pdf

https://www.newyorkfed.org/medialibrary/Microsites/arrc/files/2019/ARRC_SOFR_FRN_Matrix_Appendix.pdf

https://www.newyorkfed.org/medialibrary/Microsites/arrc/files/2020/Statement_on_SOFR_Index.pdf

The Credit Roundtable

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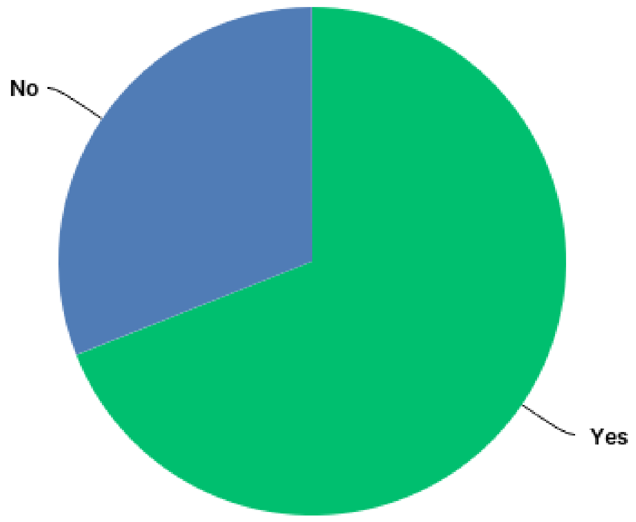
Are you planning to purchase compounded SOFR FRNs (credit) in the next few years?



ANSWER CHOICES	RESPONSES
Yes	69.01%
No	30.99%

The Credit Roundtable

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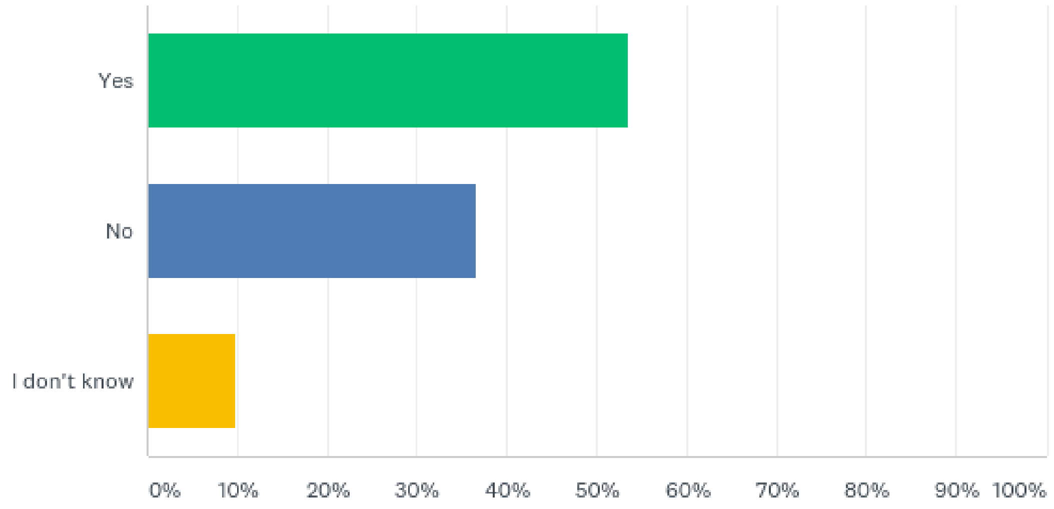
Has your institution purchased a security with a SOFR reference rate?



ANSWER CHOICES	RESPONSES
Yes	53.52%
No	36.62%
I don't know	9.86%

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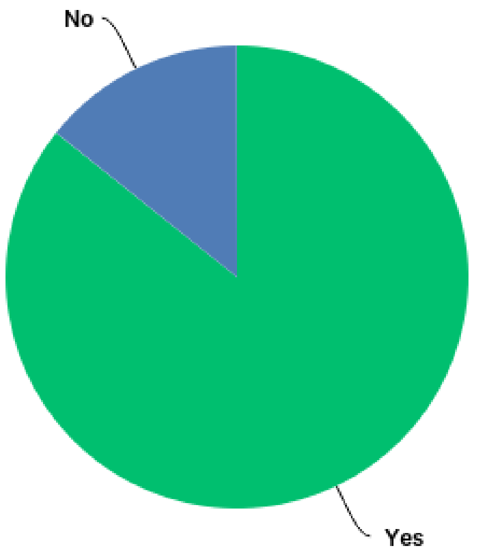
The Credit Roundtable

Would you purchase compounded SOFR securities issued by the U.S. Treasury if available in the next few years?



ANSWER CHOICES	RESPONSES
Yes	85.71%
No	14.29%

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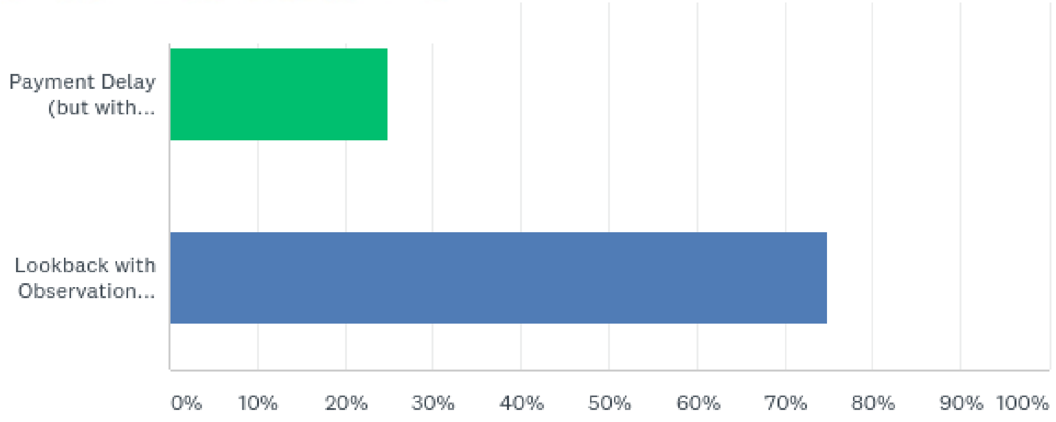
The Credit Roundtable

What is your preferred structure for Compounded SOFR FRNs?



ANSWER CHOICES	RESPONS
Payment Delay (but with lockout for final payment): With this structure, payment is due a number of business days after each interest period concludes; A lockout is applicable only for the final interest period before maturity to allow for interest to be paid on the maturity date.	25.00%
Lookback with Observation Period Shift: With this structure, the period over which SOFR is observed starts and ends a number of business days before the interest period; This backward-shift allows the rates to be appropriately weighted to match the repo market.	75.00%

The Credit Roundtable

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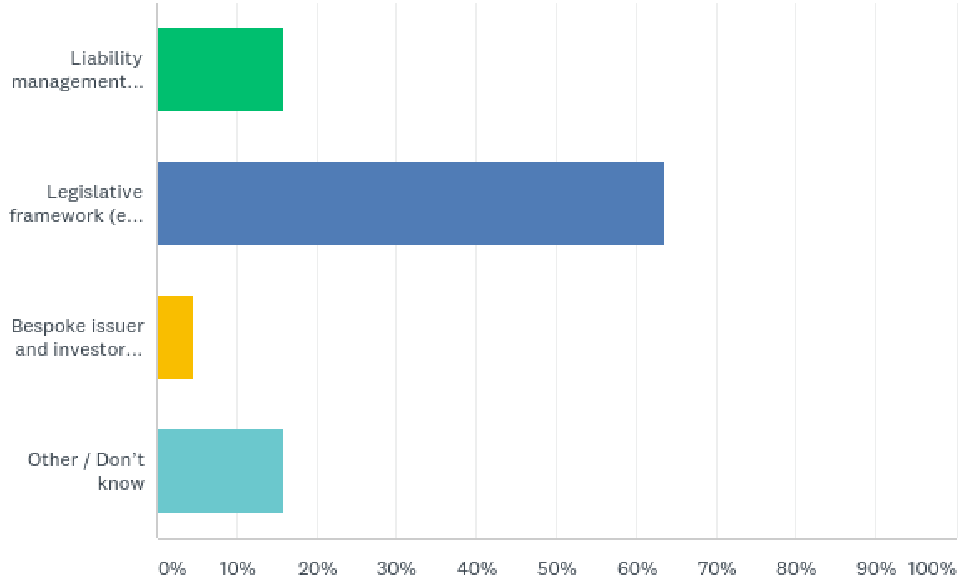
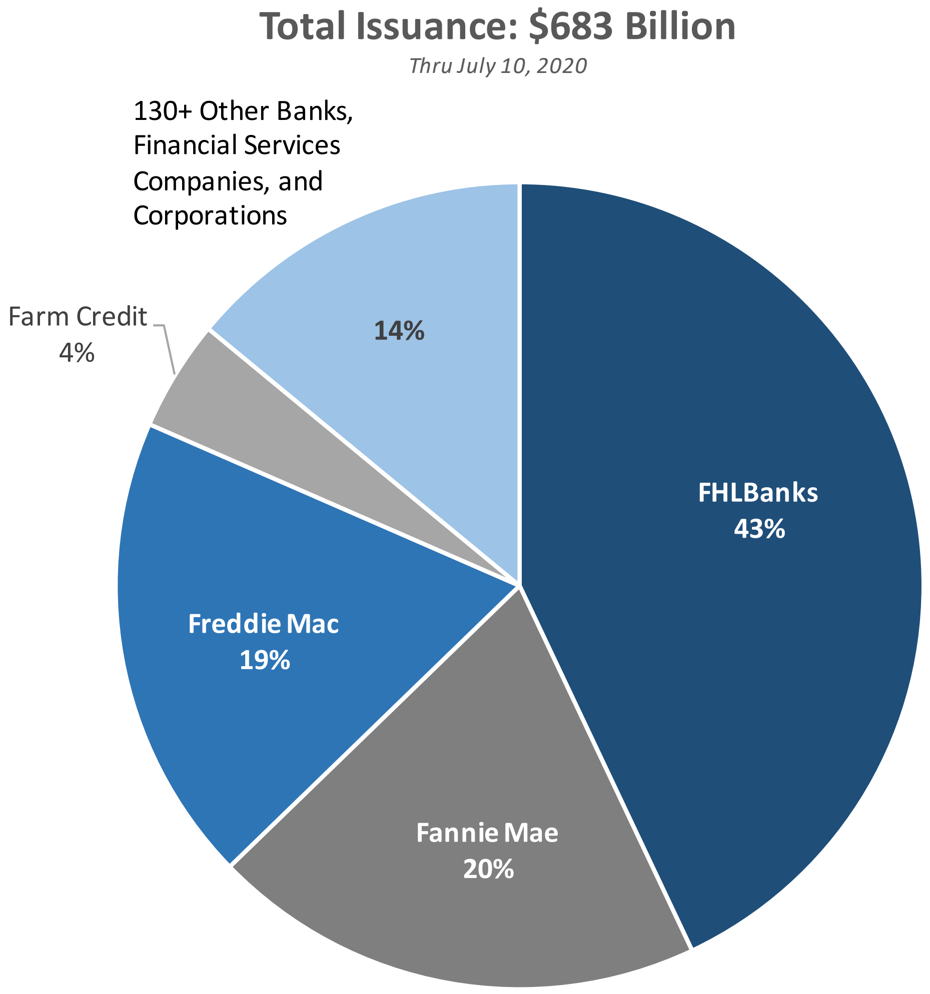
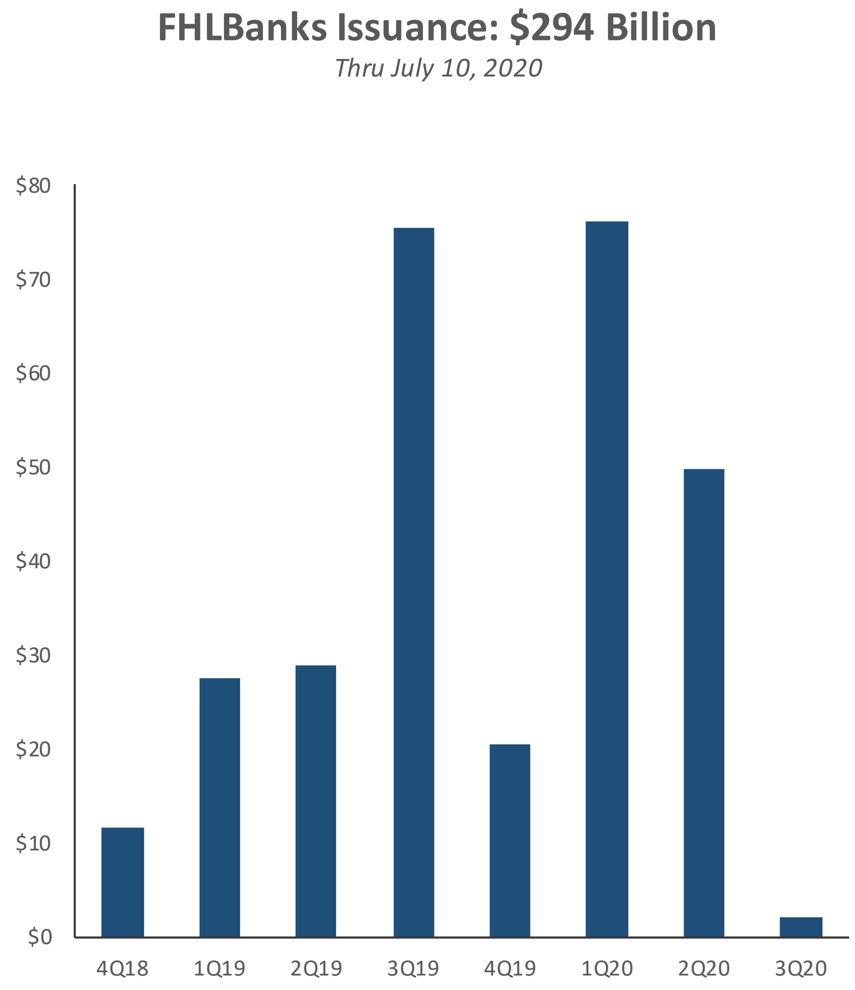
What is the most efficient way to manage long dated LIBOR exposures?



ANSWER CHOICES	RESPONSES
Liability management exercises	15.91%
Legislative framework (e.g. NY and DE)	63.64%
Bespoke issuer and investor negotiations	4.55%
Other / Don't know	15.91%

SOFR-Linked FRN Issuance Market





Source: Bloomberg

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Consumer Products and Securitizations

Ameez Nanjee

SOFR Considerations

Freddie Mac began planning for the transition to SOFR in late 2018 with the following goals:

1. Do not wait for a SOFR term rate
   - Systems and operations changes require time
   - Stop adding to LIBOR exposure as quickly as possible
2. Work with our regulator/conservator (FHFA) and Fannie Mae in several areas where alignment makes sense. For consumer products, work with the ARRC Consumer Products Working Group, which is comprised of public and private sector participants such as lenders, investors, servicers, and consumer advocacy groups
3. Reference the white paper produced by the ARRC on using an average of SOFR to build an ARM product for consumers
   - Select a version of SOFR that allows borrowers and servicers to easily and transparently verify payment in advance of the accrual period
4. Provide substantial lead time to allow for market transition

Consumer Offerings: LIBOR and SOFR ARM Comparison

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	Current LIBOR ARM Model	SOFR ARM Model
Fixed-Rate Period	3, 5, 7 or 10 years	No change to current structure
Floating Rate Index	1-year LIBOR	30-day published average of SOFR
Floating-Rate Adjustment Period	1 year	6 months
Rate / Payment Determination	New rate determined 45 days in advance of payment change date	No change to current structure
Initial Caps	2 percent for 3/1 and 5/1 ARMs 5 percent for 7/1 and 10/1 ARMs	No change to current structure
Subsequent Caps	2 percent	1 percent
Lifetime Cap	5 percent	No change to current structure
Margin	2.25 percent	Range of 1 to 3 percent

Freddie Mac and Fannie Mae will no longer accept LIBOR loans with an application date on or after October 1, 2020 and will not accept any LIBOR loans on or after January 1, 2021. Freddie Mac has announced that it will begin purchasing SOFR ARMs as of November 16, 2020.

Securitization Offerings

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- For Multifamily Offerings:
  - In December 2019, Freddie Mac announced KF73, which included the first SOFR-based bonds backed by LIBOR loans
  - On September 1, 2020, Freddie Mac will begin quoting SOFR-based floating-rate loans
  - In November 2020, Freddie Mac will begin purchasing SOFR-indexed floating-rate loans
- For CMOs:
  - This month (July 2020) we began offering SOFR-based CMOs and, depending on market conditions, will issue them at the end of the month
  - Beginning in October 2020, we will no longer offer LIBOR-based CMOs
- Both MF offerings and CMOs are indexed to an “in-advance” 30-day SOFR Average published rate
- Freddie Mac’s fallback language for MF and CMO offerings allows us to move to a term-SOFR rate (if available) upon pre-cessation of LIBOR
- For our CMOs, the move to an in-arrears rate would require significant operational and technological development that would have to be reversed in a move to term-SOFR
  - Market feedback indicated that the advantages of knowing the rate and the reduced development far outweigh any economic advantage of using an in-arrears rate

ARRC

Business Loans

Meredith Coffey

Understanding SOFR Options for Loans

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- **SOFR** – While SOFR is an overnight rate, it will need to be applied for various tenors in the loan market. There are four variations of “tenored” SOFRs being developed, each with their own strengths, weaknesses and timelines to operationalization. Because loans have options different from other products – such as revolvers and intra-period prepayability – different SOFRs may be preferable in different market segments.

- **“Tenored” SOFR rates**
  - Forward Looking Term SOFR
  - SOFR Compounded in Advance

More Similar to LIBOR	*Like LIBOR, rates are known “in Advance”*	*Term SOFR may not exist by LIBOR’s end; SOFR In Advance may have ALM issues*

  - SOFR Compounded in Arrears
  - Simple Daily SOFR

Less Similar to LIBOR	*Rates not Known in Advance; Interest rates pulled daily*	*Economics similar; Ops differ Simple is easy; Compounded harder*

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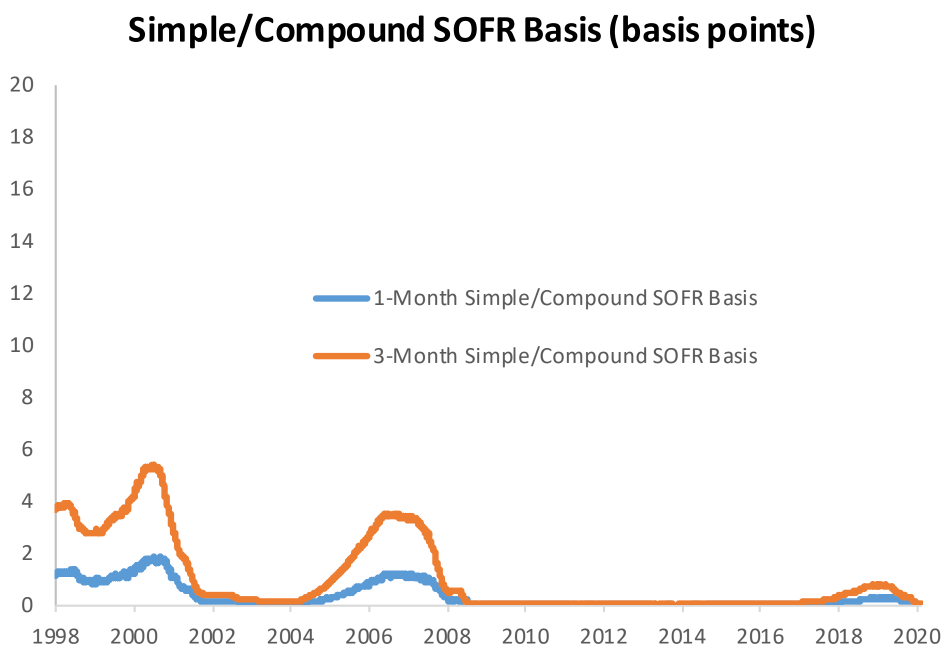
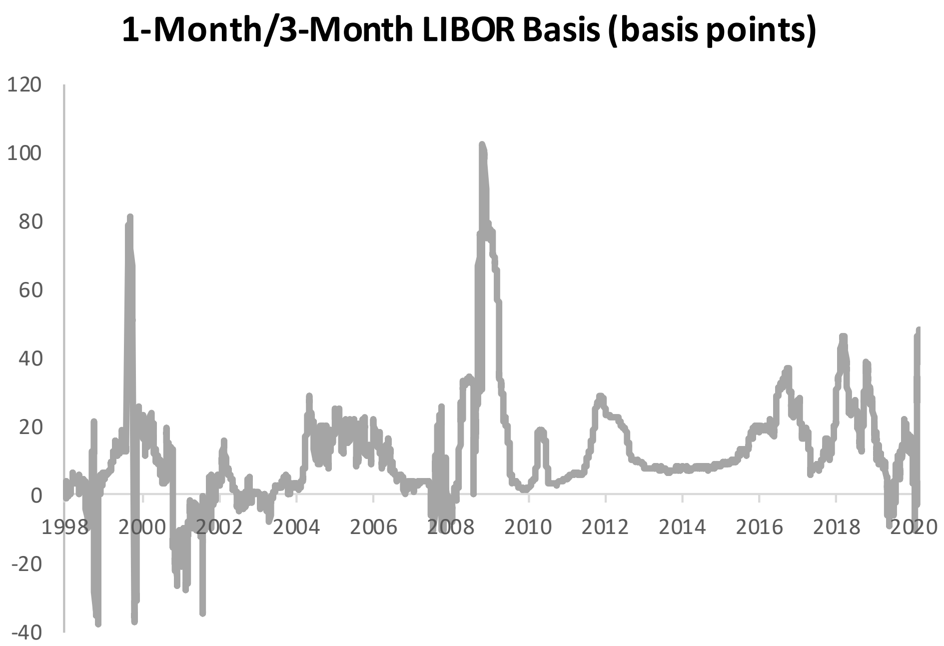
Timelines for SOFR Loans

- Can be Implemented today (or almost)
  - **Simple Daily SOFR** – works like daily LIBOR; people know how to use it and systems can handle it; economics similar to SOFR Compounded in Arrears
  - **SOFR Compounded in Advance** – works like 1M/3M LIBOR; there is pushback because of its lagged nature, which may create asset-liability management concerns

- Cannot be implemented today
  - **Forward Looking Term SOFR** – works like 1M/3M LIBOR; doesn't exist as a reference rate today; requires significant SOFR futures trading before it develops; *may* be viable in 2021
  - **SOFR Compounded in Arrears** – systems and conventions being developed; introduces *significant* complexities into loan behavior and trading; economics similar to Simple SOFR; may be viable in late 2020

Simple vs Compounded SOFR: Very Similar Economics





- 1M/3M LIBOR can vary significantly; market participants may have transferred these basis concerns to SOFR
- In contrast to LIBOR, Simple & Compounded SOFR rates are nearly identical
- Avg 20-year Simple/Compound SOFR basis is 0 bps for 1M (2 bps maximum) and 1 bp for 3M (5 bps maximum)
- *Note the Y axis scales – more basis when rates are higher, but basis is low even in 5-6% SOFR environment and note that the range of the 1-month/3-month LIBOR basis -20bp to 120bp*

ARRC Best Practice Recommendations and Timelines*

Business Loans

- **9.30.20** – Start using *hardwired* fallbacks in new loans (and refinancings)
- **9.30.20** – External vendors to have developed systems handling all versions of SOFR
- **6.30.21** – No more loans originated on LIBOR
- **6 Months Prior to LIBOR Cessation** – If a party has discretion to choose a new rate, disclose anticipated replacement rate

CLOs

- **6.30.20** – Use *hardwired* fallbacks in new CLOs (and refinancings)
- **12.31.20** – External vendors to have developed systems handling all versions of SOFR
- **9.30.21** – No more CLOs originated on LIBOR
- **6 Months Prior to LIBOR Cessation** – If a party has discretion to choose a new rate, disclose anticipated replacement rate

* Available at https://www.newyorkfed.org/medialibrary/Microsites/arrc/files/2020/ARRC-Best-Practices.pdf

Upcoming ARRC Recommended Conventions for SOFR in Arrears in Syndicated Loans

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Interest Calculations

- *Compound Interest:* Interest is compounded on business days. Over weekends or holidays, the preceding business day's rate is applied, weighted by the number of calendar days until the next business day.
- *Simple Interest:* For all days simple interest based on SOFR is used; the preceding business day's rate is applied over weekends or holidays, weighted by the the number of calendar days until the next business day.

Lookback/Lockout/Payment Delay

Business day lookback (no observation shift)

Simple Example: for interest to be charged for June 1, 2020. With a five business day lookback, the agent will apply the rate from May 25, to the June 1st balance.

Business Day Convention

Modified Following Business Day Convention

Floors

If there are interest rate floors in a credit agreement, it is recommended that the floor be calculated daily.

Distribution of Interest

Currently, daily accrued interest is calculated on each lender’s share of principal that day. The ARRC recommends the same convention for SOFR.

Other

Conventions on Day Count, Timing, Rounding, etc.

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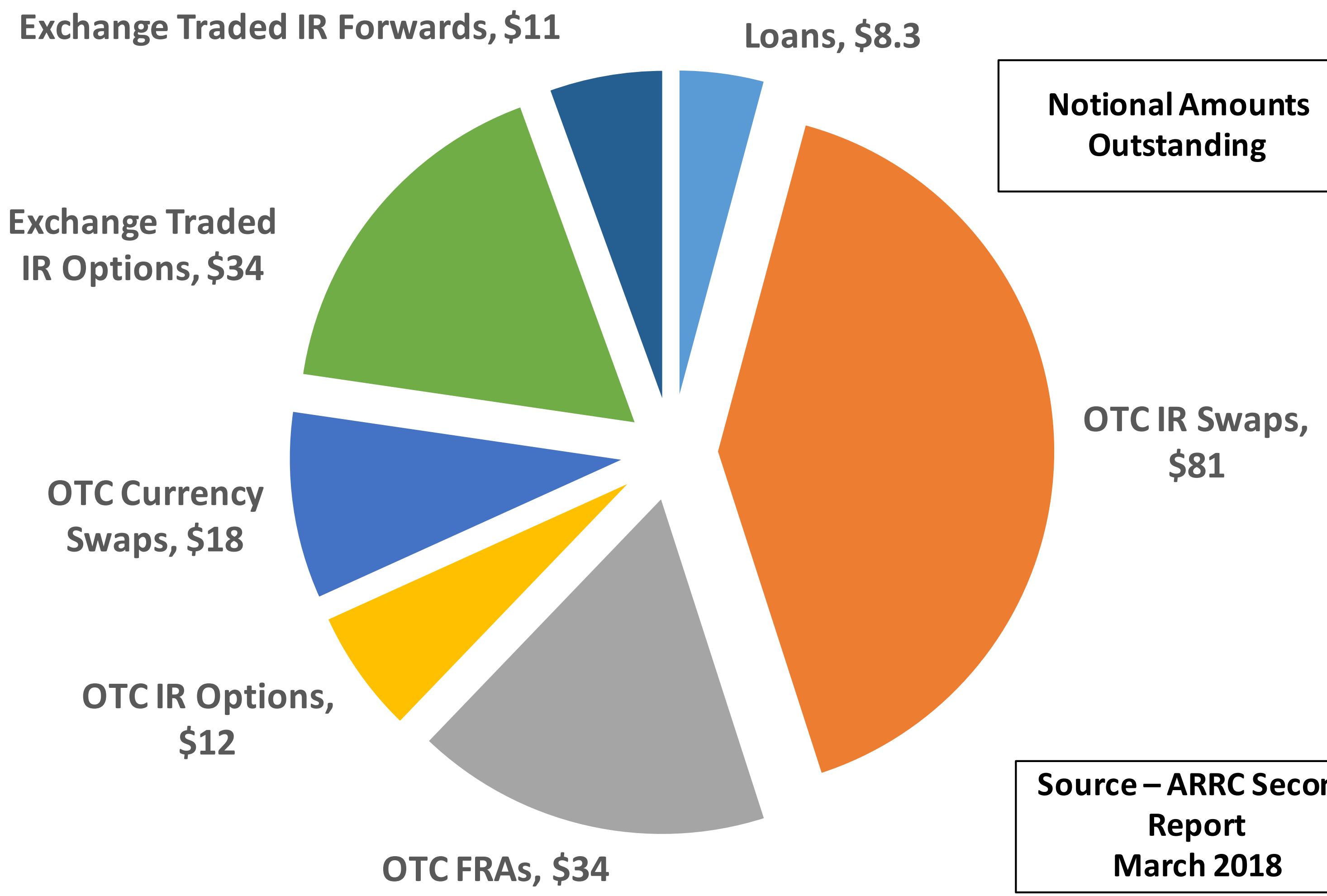
Nonfinancial Corporates

Tom Deas

LIBOR Exposures ($200 Trillion) – Most Sources of Exposure are Important for Corporates



Notional Amounts Outstanding

Source – ARRC Second Report March 2018

Corporate Uses of LIBOR

- **Committed Credit Agreements** (Including CP Back-up Lines)
- **Multi-currency Credit Agreements** (Borrowings in USD, EUR, GBP)
- **Inter-affiliate/intra-group loans** (Used for daily cash concentration)
- **Term Loans / FRNs / Asset Securitizations** (Interest payment calculations)
- **Accounting** (FV Calcs, Lease Valuations, Capitalization of Interest, Derivatives)
- **Asset Purchase and Sale Agreements** (Adjustment for changing closing date)
- **Supply Agreements** (Adjustments for volume variances, late payments)
- **Long-term Capital Goods Purchases** (Milestone timing adjustments)
- **Employee Benefit Payments** (Adjustments for payment delays)

Credit Agreement Considerations

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- Credit agreement pricing grids are based on LIBOR plus a ratings-based credit spread
- Same IBOR spread now in multi-currency agreements for USD, EUR, GBP
- LIBOR includes an inter-bank lending spread while SOFR and the other IBOR replacements (such as ESTER for euro or SONIA for sterling) are secured or unsecured risk-free overnight rates
- LIBOR spreads have exhibited volatility
- The typical corporate borrower with no SOFR securities issued has no current market check on what its SOFR spread should be, making repricing its credit agreements to SOFR challenging
- Negotiating an appropriate credit spread adjustment across multiple currencies and maturities will be a challenge

Potential Money Market Pricing Solution to Determine Corporate SOFR Credit Spreads

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- Credit agreements in the 1980s and 90s often had a money market pricing option:
    - Borrowers could request competitive bids from existing members of their revolving credit bank group, but banks' participation in any bidding was optional on their part
    - Borrowers requested terms of either 1, 2, 3, or 6 months
    - Banks bid amounts at a spread over LIBOR
    - Borrowers accepted bids from lowest to highest with the total amount accepted the borrower's choice
- SOFR spreads could be determined by reincorporating this process into new corporate credit agreements, with the SOFR-based loans resold into the money markets